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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/012,210	11/05/2001	Stephen V.R. Hellriegel	901115.435	5315
500	7590	01/12/2005	EXAMINER	
SEED INTELLECTUAL PROPERTY LAW GROUP PLLC			DINH, TUAN T	
701 FIFTH AVE			ART UNIT	
SUITE 6300			PAPER NUMBER	
SEATTLE, WA 98104-7092			2841	

DATE MAILED: 01/12/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/012,210

Applicant(s)

HELLRIEGEL ET AL.

Examiner

Tuan T Dinh

Art Unit

2841

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 15 September 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11/05/01 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Drawings*

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the "first and second circuit boards, see claims 1, lines 1-2 and claim 14, lines 1-2", "the second circuit board, see claim 7, line 4" must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Claim Rejections - 35 USC § 112***

2. Claims 1-8 and 14-17 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The specification is not disclosed a new matter of the limitations of "a device configured to electrically connect first and **second circuit boards**, recited in claims 1 and 14".

**Note:** Because the specification and drawing of the invention do not show and describe "the second circuit board" so that examiner assumes the limitation that does not exist and not consider through the Office action.

***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1-2, 4, 6-17 are rejected under 35 U.S.C. 102(e) as being anticipated by Markovick et al. (U. S. Patent 6,291,776).

Regarding claims 1-2, Markovick discloses a device in figures 2-12 comprising:  
a flexible substrate (14, column 4, lines 31-32), a plurality of contact pads (12, column 4, line 31) on a first surface of the substrate (14) configured to make electrical contact with contacts pads of a first circuit board, see figures 11-12, and a strain relief structure, which is an aperture (10), column 3, lines 6-14, 27-41, and column 4, lines 30-31), positioned between two of the pads, see figures 2-3, and penetrate through the flexible substrate.

Regarding claims 4, 6, Markovick discloses the strain relief structure (aperture 10) is a thinned region of the substrate (14), and is centered on a line between centers of two of the pads (12).

Regarding claims 7-8, Markovick discloses **in figure 6** further comprising a plurality of electrical traces (see a sketched of an attaching paper attached in the previous Office action), each of the traces being in electrical contact with one of the pads (12), and the strain relief structure (aperture 10) is positioned and interrupted one of the traces.

Regarding claims 9-10, 12-13, and 21, Markovick discloses a flexible connector and a method of manufacturing a flexible connector as shown in figures 2-12 comprising:

a flexible substrate (14), a plurality of contact pads (12) arranged in a first surface of the substrate (14);

a plurality of electrical traces (see the previous Office action) formed on either first and second surfaces or formed on an inner layer of the flexible substrate (14), each

of the traces being in electrical contact with a respective one of the pads (12) and configured to provide an electrical coupling with a second/additional electrical connector, see figures 11-12; and

a plurality of apertures (10), see figure 6, each being function as a strain relief structure, penetrating through first and second surfaces of the substrate (14), the aperture (10) are arranged in a regular configuration and intercalated into the pads.

Regarding claim 11, Markovick discloses in figure 6 further including breaking one of the traces with the forming the strain relief step (apertures 10).

Regarding claims 14-15, Markovick discloses a flexible connector as shown in figures 2-12 comprising:

a flexible substrate (14), a plurality of contact pads (12) formed on a first surface of the substrate and arranged in a regular configuration in a contact region of the substrate (14); and

means for increasing flexibility comprises a plurality of apertures (10), see figure 6, intercalates with the pads (12) and penetrating from the first to a second surfaces of the substrate, the second surface is opposite to the first surface.

Regarding claim 16, Markovick discloses the means for increasing flexibility comprises a plurality of blind apertures (10), intercalates with the pads (626A-626C) and penetrating from the first surface to selected depth.

Regarding claim 17, Markovick discloses the means for increasing flexibility comprises a thinning of the flexible substrate (14) in the contact region, relative to a thickness of the substrate outside the contact region.

Regarding claims 18-20, Markovick discloses in figures 2-6 that each of the apertures (10) is configured to (intended used) to increase flexibility of the substrate, see figures 4-5, and further comprising an additional electrical trace interrupted by one of the apertures, see figure 6.

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 3 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Markovick ('776) in view of Furnival ('074) as shown in the record.

Regarding claims 3, 5, Markovick discloses all of the limitations of the claimed invention, except for the aperture having, in a plane view, a rectangular shape. Furnival shows a device as shown in figure 2 wherein the aperture (16) having a rectangular shape.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use a rectangular shape aperture as taught by Furnival to employ in the device of Markovick in order to improve more spaces, which is inexpensive and more reliable, for an interfacial connection.

***Response to Arguments***

7. Applicant's arguments with respect to claims 1-21 have been considered but are moot in view of the new ground(s) of rejection.

Applicant argues:

Markovick does not disclose "plated through holes 10" as disclosed in the references as "a strain relief structure." It is incorrect, the Markovick references clearly disclose in column 3, lines 6-32 that the plated through holes 10 having a function such as a strain relief structure which used to reduce a stress and strain to the chip carrier 14.

Markovick does not disclose "the strain relief structure in the formed of the thinned region of the substrate." It is in correct. Due to the stress of the substrate (14), the reference shows the through hole (10) formed in the region which is thinner than the entire region of the substrate, see figures 4b and 5b.

Markovick does not disclose "a plurality of electrical traces configured to place contact pads configured to make electrical contact with contact pads of a first circuit board." It is incorrect. In figures 6 and 11-12, the reference discloses the substrate (14) having traces and pads (12) electrically connect to pads of a circuit board, see figures 11-12.

Markovick does not disclose "the strain relief structure in position interrupted one of the traces." It is incorrect. Figure 6 clearly shows that structure.

Markovick does not disclose "the flexible substrate." It is incorrect. The substrate 14 is made by an organic material, therefore, it is flex.



Markovick does not disclose "the traces in contact with the contact pads of the first connector. Examiner disagrees. Figure 6 shows that limitation.

Markovick does not disclose the step of "forming the traces and pads on a surface of the substrate." Figures 2-12 disclose the substrate having pads and traces that are formed on a surface, therefore, they are disclosed these step.

Markovick does not disclose "means for (the strain relief structure) increasing flexibility of the substrate in the contact region." Examiner disagrees. The through hole (10 formed between two pads to reduce the stress and strain between the two pads.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tuan T Dinh whose telephone number is 571-272-1929. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kammie Cuneo can be reached on 571-272-1957. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Tuan Dinh  
May 25, 2004.

  
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